

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A chemically bonded biomaterial element comprising:  
an inorganic cement, exhibiting minimal dimensional changes upon hardening and long-time use, improved mechanical properties and improved translucency;  
and added inert filler particles, wherein  
the biomaterial element has a micro-structure to meet an algorithm, which is-defined by a formula:

$$\lambda = \frac{d * (1 - V_F)}{(V_F)}$$

where  $\lambda$  is the distance between filler particles of mean size  $d$ , and  $V_F$  is the volume content of non-reacted cement and the added inert filler particles, and where  $\lambda \leq 10 \mu\text{m}$ , and  
wherein the added inert filler particles have a particle size below  $5 \mu\text{m}$ , and  
wherein the added inert filler particles consist of glass particles, apatites, brucite and/or bohmite.

2. (Previously Presented) The biomaterial element according to claim 1, wherein  $\lambda \leq 8 \mu\text{m}$ .
3. (Previously Presented) The biomaterial element according to claim 1, wherein  $V_F$  is less than 50 %.
4. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of  $< 5 \text{ MPa}$  on a surrounding volume.
5. (Previously Presented) The biomaterial element according to claim 1, wherein

the inorganic cement comprises Ca-aluminate, Casilicate and or Ca-phosphate, or a mixture thereof.

6. (Previously Presented) A biomaterial element according to claim 1, wherein the inorganic cement comprises  $\text{CaO-Al}_2\text{O}_3$  system, and a particle size of formed hydrates of these phases is below  $3 \mu\text{m}$ .

7. (Previously Presented) The biomaterial element according to claim 1, wherein the biomaterial element further comprises an organic phase of polyacrylates and/or polycarbonates at a volume content of less than 5 %.

8-9. (Cancelled)

10. (Previously Presented) The biomaterial element according to claim 1, wherein it comprises in-situ formed apatite that separates the formed hydrates of the main system.

11. (Previously Presented) The biomaterial element according to claim 1, wherein a total porosity is below 10 %, where at least 90% of the pores are minipores having a diameter below  $0.5 \mu\text{m}$ .

12. (Currently Amended) The biomaterial element according to claim 1, wherein it is a dental material[[],].

13. (Previously Presented) The biomaterial element according to claim 1, wherein the biomaterial element contains an orthopaedic material or a bone cement.

14. (Previously Presented) The biomaterial element according to claim 1, wherein it is a component, or is in granule form, or in a carrier material for drug delivery.

15. (Cancelled)

16. (Previously Presented) The biomaterial element according to claim 1, wherein  $\lambda \leq 4$   $\mu\text{m}$ .

17. (Previously Presented) The biomaterial element according to claim 1, wherein  $\lambda \leq 2$   $\mu\text{m}$ .

18. (Previously Presented) The biomaterial element according to claim 1, wherein  $V_F$  is 5-45 %.

19. (Previously Presented) The biomaterial element according to claim 1, wherein  $V_F$  is 15-35 %.

20. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 2 MPa on a surrounding volume.

21. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 1 MPa on a surrounding volume.

22. (Previously Presented) The biomaterial element according to claim 6, wherein the CaO-Al<sub>2</sub>O<sub>3</sub> system is CaO, (CaO)<sub>3</sub>Al<sub>2</sub>O<sub>3</sub>, (CaO)<sub>12</sub>(Al<sub>2</sub>O<sub>3</sub>)<sub>7</sub>, CaOAl<sub>2</sub>O<sub>3</sub>, (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>2</sub>, (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>6</sub> or pure Al<sub>2</sub>O<sub>3</sub> or a mixture thereof.

23. (Previously Presented) The biomaterial element according to claim 6, wherein a main phase of the CaO-Al<sub>2</sub>O<sub>3</sub> system is CaOAl<sub>2</sub>O<sub>3</sub> or (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>2</sub>.

24. (Previously Presented) The biomaterial element according to claim 6, wherein a main phase of the CaO-Al<sub>2</sub>O<sub>3</sub> system is CaOAl<sub>2</sub>O<sub>3</sub>.

25. (Previously Presented) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 1  $\mu\text{m}$ .

26. (Previously Presented) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 0.5  $\mu\text{m}$ .

27. (Previously Presented) The biomaterial element according to claim 1, wherein added inert filler particles have a particle size below 2  $\mu\text{m}$ .

28. (Previously Presented) The biomaterial element according to claim 1, wherein a total porosity is below 5 %, distributed on minipores having a diameter below 0.1  $\mu\text{m}$ , to an extent of at least 90 % of the total porosity.

29. (Previously Presented) A biomaterial element according to claim 12, wherein the dental material is a dental filling material or a root filling material.